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ED&T REPORT NO. 5700-7

[1965]



PARACHUTE LANDING SIMULATOR

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EQUIPMENT DEVELOPMENT CENTER
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U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
WASHINGTON, D. C.



UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
WASHINGTON, D.C. 20250

IN REPLY REFER TO

5700

June 1965

The Parachute Landing Simulator described in ED&T Report
No. 5700-7 is approved for optional U.S. Forest Service
use.

Merle S. Lowden
MERLE S. LOWDEN, Director
Division of Fire Control



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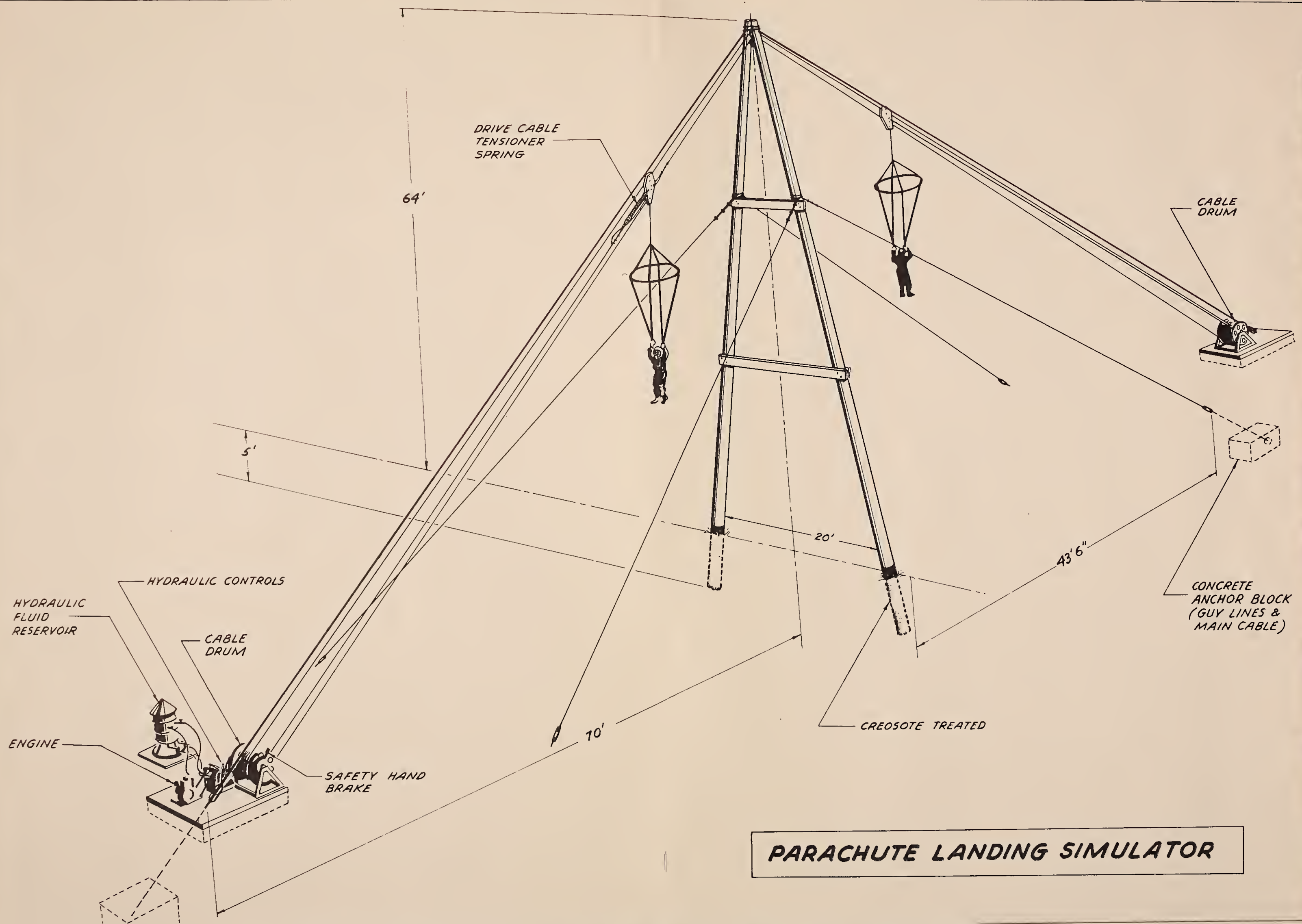


Figure 1.--Training unit for teaching smokejumpers to make proper parachute landings.

February 1965

EQUIPMENT DEVELOPMENT REPORT

ED&T 1408.8 - PARACHUTE LANDING SIMULATOR

U. S. Department of Agriculture
Forest Service
EQUIPMENT DEVELOPMENT CENTER

INTRODUCTION

This project was initiated to provide a training device for teaching smokejumpers to properly execute parachute landings. The project has been completed.

DESIGN REQUIREMENTS

These general requirements for the parachute landing simulator were established at the 1959 Interregional Smokejumper Workshop.

1. Minimum height -- 40 feet.
2. Angle of descent -- 45 degrees.
3. Rate of descent -- variable.
4. Risers -- webbing.
5. Suitable for practicing forward, backward and side rolls.
6. Simple operation.
7. Safe.

DESIGN FEATURES

The general construction and layout of the landing simulator are shown in Figure 1.

Frame. Two 70-foot poles, joined in the shape of an "A", are set 6 feet into the ground, and are guyed to buried concrete blocks with four 7/16-inch cables. The 3/4-inch main cables on which the main carriages run are anchored to the top of the A-frame, then to buried concrete blocks. Two sheaves, mounted near the top of the A-frame, guide the drive cables.

Suspension. The smokejumper trainee, in jump suit and harness, is locked to the lift webbings with standard Capewell fittings. The suspension system (fig. 2) is fastened to a 5/16-inch cable leading from the carriage. A swivel on the end of the cable permits the trainee to practice rolls to the front, rear, or to the side, and prevents the cable from being twisted. Two trainees are lifted (fig. 3) and dropped at one time.



Figure 2.--Trainee wears jump suit and harness when practicing parachute landings. Shroud lines shown here were replaced with webbing to reduce tangling.

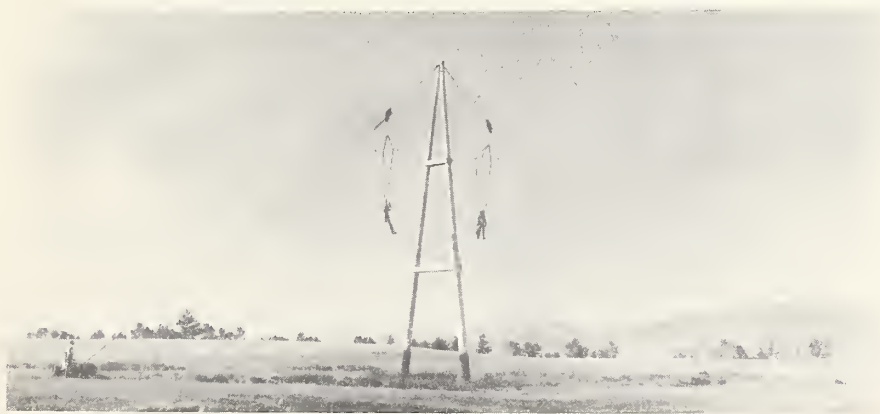


Figure 3.--Two trainees are raised and dropped simultaneously. Line of travel is approximately 50 degrees to horizontal.

Power and Controls. The winch system is hydraulically operated (fig.4) for smooth and safe operation. A 9-hp. gasoline engine runs the main hydraulic pump. Rate of descent is controlled by adjusting flow valves. The systems which raise and lower the carriages are interlocked to prevent accidental, uncontrollable descent. Relief valves prevent excessive pressure from building up within the system. The hydraulic reservoir is large enough to maintain the fluid at the temperature specified for sustained operation. The winch is equipped with a mechanical brake within easy reach of the operator.

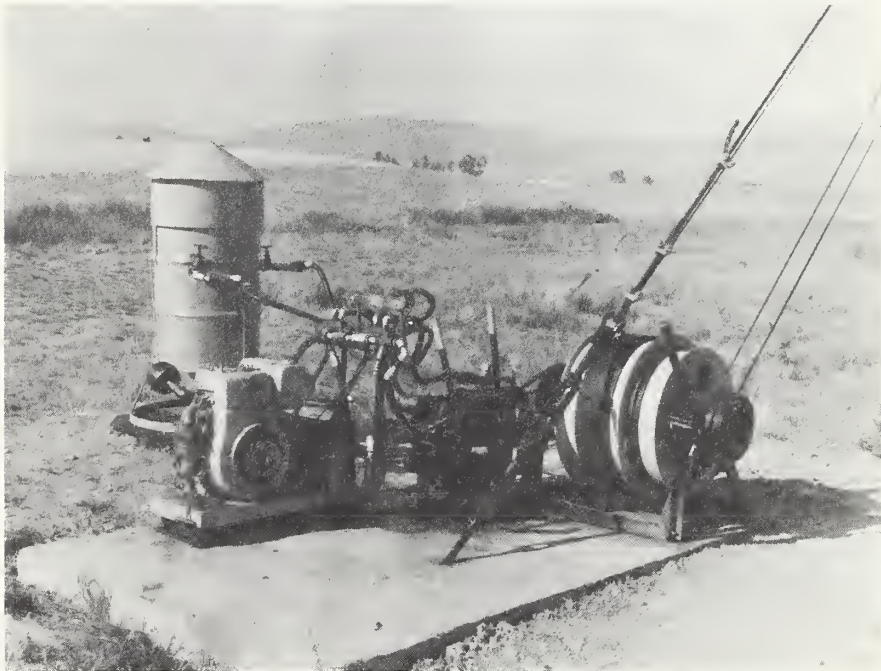


Figure 4.--Lift system is hydraulically operated.

Field Trials. The landing simulator has been used in Region 1 for two seasons. Experienced smokejumpers agree that the unit is the most satisfactory device to date for practicing parachute landings (fig. 5). Operators are easily trained. Maintenance and operating costs are negligible. Operating and maintenance instructions are available from Missoula Equipment Development Center.



Figure 5.--Smokejumper practicing parachute landing.

Construction. Estimated costs for building the landing simulator total \$3000. Construction drawings and parts lists (ED-247-R1) are available from MEDC.

